



ON THE COLLECTION OF DATA AT AUTOPSIES.¹

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THE committee appointed to consider a plan for securing uniformity in the data of autopsies respectfully present the following blank form to be filled by the examiner making the autopsy, together with detailed instructions for making the required measurements.

As the object of collecting data of this sort is to determine the normal standard of size for the various organs at different ages, as well as the variations from this standard which are associated with different diseases or tendencies to disease, it is important to neglect no opportunity of securing a complete set of measurements, whatever may be the age, sex, or manner of death of the individual.

As an example of the kind of problems to be solved by investigations of this sort, attention is called to the results of Professor Beneke's observations, to which allusion has already been made in volume i., page 140, of the Transactions of this Society. These conclusions are here reproduced in a corrected and modified form in accordance with the request of Professor Beneke, expressed in a letter to one of the committee.

- (1.) Before the period of puberty the aorta is *smaller* than the pulmonary artery, after this period the relation begins to be reversed, and in advanced life the aorta is always *larger* than the pulmonary artery.
- (2.) The aorta and pulmonary artery are absolutely smaller in the female than in the male, but relatively to the length of the body there is scarcely any difference between the circumference of the arteries in the two sexes, while the heart in females is absolutely as well as relatively a little smaller than in males.
- (3.) In adult males the volume of the lungs is greater than that of the liver; in adult females the reverse seems to be true.
- (4.) In men the volume of the two kidneys is nearly equal to that of the heart; in children it is greater.
- (5.) Children have a relatively larger intestinal canal than adults.
- (6.) A sudden increase in the size of the heart occurs at the period of puberty.
- (7.) The iliac arteries diminish in size during the first three months of life.
- (8.) The cancerous diathesis is, in the majority of cases, associated with a large and powerful heart and capacious arteries, but a relatively small pulmonary artery, small lungs, well-developed bones and muscles, and tolerably abundant adipose tissue.

¹ A report presented to the Massachusetts Medico-Legal Society, February 1, 1882.

(9.) Pulmonary tuberculosis is often associated with an unusually small heart.

(10.) In constitutional rachitis the heart is generally large and well developed; the arteries are also large.

The data to be collected by this Society will be of great use in confirming or correcting these and similar conclusions.

H. P. BOWDITCH.

F. A. HARRIS.

RECORD OF AUTOPSY.

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|------|---|---------------------------------|
| (5) | (1.) Age years.....months. | (2.) Sex |
| (6) | (3.) Cause of death | |
| (8) | (4.) Height of bodycm. | (5.) Weight of body kilo. |
| (17) | (6.) Heart, weightgrammes; volumecc. | |
| (19) | (7.) Lungs, weightgrammes; volumecc. | |
| (22) | (8.) Liver, weightgrammes; volumecc. | |
| (23) | (9.) Spleen, weightgrammes; volumecc. | |
| (24) | (10.) Kidneys, weightgrammes; volumecc. | |
| (25) | (11.) Testicles, weightgrammes; volumecc. | |
| (26) | (12.) Uterus, weightgrammes; volumecc. | |
| (27) | (13.) Ovaries, weightgrammes; volumecc. | |
| (28) | (14.) Brain, weightgrammes; volumecc. | |
| (29) | (15.) Stomach, weightgrammes. | |
| (30) | (16.) Small intestine, length.....cm. | |
| (31) | (17.) Large intestine, length.....cm. | |
| (32) | (18.) Circumference of ascending aorta mm. | |
| (33) | (19.) Circumference of pulmonary artery mm. | |
| (34) | (20.) Circumference of thoracic aorta. mm. | |
| (35) | (21.) Circumference of abdominal aorta mm. | |
| (36) | (22.) Time between death and autopsy hours. | |
| (37) | (23.) Rigor mortis | |

A description of the organs, if in any way abnormal, should be given on the opposite side of this sheet, the paragraphs of the description being numbered to correspond to the record.

Signature of Examiner

INSTRUCTIONS FOR MAKING MEASUREMENTS.

(a) The measurements required in this record call for special explanation only so far as they relate to the determination of the volume of organs and the circumference of arteries.

(b) The volume of an organ is most simply determined by immersing it in a vessel previously filled to the brim with water, and measuring the amount of water which is thus caused to flow over the edge. The sort of vessel most convenient for this purpose will vary with the size of the organ under investigation. For large organs like the liver a large stone jar or a water pail set in a large basin or tin pan will be found convenient. For smaller organs, such as the testicles, a cup and saucer may be used. It is desirable to use a vessel which has one point of its brim lower than the rest, so that the overflow may always take place from that point. If such a vessel cannot be conveniently procured, the same result may be accomplished by placing the vessel in a slightly inclined position. [Vessels made for the purpose may be obtained from C. Gerhardt, in Bonn.] The volume of the water displaced by the organ can be measured by pouring it from the vessel into which it overflows into a graduated cylinder. [Such cylinders, from ten to one thousand cubic centimetres' capacity, may be obtained from the Metric Bureau, at prices varying from fifty cents to three dollars.]

(c) In the case of organs which float in water (for example, the lungs) a weight must be attached to effect their complete immersion, and the proper allowance made for the volume of the weight.

(d) The circumference of arteries is measured by opening them along one side,

spreading them out flat, and applying a millimetre ^{or other reliable} scale to their inner surface.

(2) The following precautions are to be observed in taking the measurements and in making up the record of the autopsy. The numbers correspond to those of the record.

(5) (1.) The age should be recorded in years and months in the case of children less than two years old. For older children and for adults it is sufficient to record the age at the last birthday. When the age is estimated, and not accurately known, the fact should be stated in the record.

(9) (4.) The height of the body is best measured by placing boxes or other square-cornered objects against the head and feet of the body as it rests horizontally upon the floor or table, marking the position of the boxes upon the surface on which they rest, and measuring the distance between the marks thus obtained. *feet*

(9) (5.) The weight of the body of an adult may be readily determined on small grocer's scales by placing it upon a board laid across the platform. The weight of the board must of course be deducted.

(16) (6.) The heart is prepared for measurement by opening all its cavities and removing the clots, by cutting off the aorta and pulmonary artery on a line ^{one inch above} with the upper border of the semilunar valves, by cutting off the veins at their junction with the auricles ^{to} and by removing adherent portions of pericardium. ^{horizontal} In measuring the volume of the heart by immersing it in water, care should be taken to prevent air bubbles from being entangled by the valves and trabeculae. If an unusual amount of fat is adherent to the muscular substance of the heart the fact should be stated in the record.

(17) (7.) The lungs are prepared by removing the bronchial glands and adherent portions of pleural membrane, and by cutting off the blood-vessels and bronchial tubes as near as possible to the hilus. A weight of 0.5 to 1 kilogramme to insure the immersion of the lungs may be best attached by means of a large, sharp hook, on which the lungs can be impaled. It is particularly important in the case of the lungs to give a full account of any pathological changes that may be noticed, such as oedema, engorgement, etc., otherwise the determination of the volume and weight has little value. ^m *with each lung separate*

(22) (8.) The liver is prepared by removing adherent portions of the diaphragm and vena cava, as well as the ligaments and the gall bladder. The vessels are to be cut off close to the hilus. ^m *Measure & state the quantity of blood in it*

(24) (9.) The spleen is prepared by removing from the hilus the fat, connective tissue, and blood-vessels. ^m

(25) (10.) The kidneys are prepared by removing the capsules, and freeing the hilus ^m as far as possible from fat, connective tissue, and vessels.

(29) (11.) The testicles are prepared by cutting off the cord on a level with the head of the epididymis.

(30) (12.) The uterus is prepared by cutting off the ligaments as close as possible to the body of the organ, and removing adherent portions of the vaginal walls.

(31) (13.) The ovaries are prepared by removing adherent portions of the peritonæum.

Uterus, Fallopian tubes & ovaries should be weighed together, when the specimen is to be preserved.

- (10) (14.) The brain is to be removed in the usual manner, the medulla being divided at the point of the calamus scriptorius. *an inch below the Pons*
- (21) (15.) The stomach is prepared by separating from the œsophagus and the intestines at the cardiac and pyloric orifices respectively, and by removing adherent portions of peritonæum and fat. The organ is to be opened along its lesser curvature, and the contents entirely removed.
- (32) (16.) The length of the small intestine is measured from the pylorus to the ileo-cæcal valve. The organ is prepared by removing the mesentery as completely as possible, and forcing a stream of water through it to remove the intestinal contents. It is then to be spread out upon a table, and its length determined. In consequence of the elasticity of the intestine an error of two per cent. is hardly to be avoided.
- (33) (17.) The length of the large intestine is measured from the origin of the appendix vermiformis to the anus. The organ is prepared in the same way as the small intestine.
- The circumference of the arteries to be determined, as above described, is measured at the following points:—
- (34) (18.) Ascending aorta, one centimetre above the border of the semilunar valves.
- (35) (19.) Pulmonary artery, same as ascending aorta.
- (36) (20.) Thoracic aorta, at a point one third of the distance from the origin of the left subclavian artery to the bifurcation of the abdominal aorta.
- (37) (21.) Abdominal aorta, two centimetres above its bifurcation.
- (7) (23.) State, if possible, the duration and intensity of the rigor mortis, and whether it had entirely disappeared at the time of the autopsy.